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Peter Taube

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EXAMINER

JOHNSON, MATTHEW A

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,869	Applicant(s) TAUBE ET AL.	
	Examiner MATTHEW A. JOHNSON	Art Unit 3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/7/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" "**comprising**" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "**The disclosure concerns**," "The disclosure defined by this invention," "The disclosure describes," etc.

Drawings

2. The drawings are objected to because in figures 6-10, the lines are not uniformly thick (as required by 37 CFR 1.84(l)) and solid black shading is not permitted (as required by 37 CFR 1.84(m)). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

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amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, “an air gap between said magnetic element and said sleeve” (claim 6), “said shaft is made in sections of different parts” (claim 7), “said parts are made of different material” (claim 8), “the shaft is provided with a return cap” (claim 16, Fig. 9 appears to show the nut provided with the return cap), “arranging magnetic elements on an outer surface of said rotating member (claim 21, the magnetic elements appear to be provided on an outer surface of the sleeve 123, and not an outer surface of the rotating member 120) must be shown or the feature(s) canceled from the claim(s). Additionally, regarding claim 17 which depends from claim 12, none of the embodiments appear to show the nut having a ball

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return as claimed in claim 12 as well as the liner return in the shaft as claimed in claim 17. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1, 3, 9, 11, 14-16, 20 and 21, are objected to because of the following informalities:

Re clm 1: The phrase, "substantially perpendicular to extension direction of said grooves" is grammatically awkward and should read -- substantially perpendicular to an extension direction of said grooves --.

Re clm 3: The phrase, "said shaft is arranged as ball screw" is grammatically awkward and should read -- said shaft is arranged as a ball screw --.

Re clm 9: The phrase, "substantially parallel with extension of said shaft" is grammatically awkward and should read -- substantially parallel with an extension direction of said shaft --.

Re clm 11: The phrase, "comprises ball return" is grammatically awkward and should read -- comprises a ball return --.

Re clm 14: The phrase, "having multi linear ball return" is grammatically awkward and should read -- having multiple linear ball returns --.

Re clm 15: The phrase, "a single- or multi liner system" should read -- a single or multi liner system --.

Re clm 16: The phrase, "wherein return cap system" is grammatically awkward and should read -- wherein said return cap system --.

Re clms 20 and 21: The phrase, "substantially parallel with extension of said shaft" is grammatically awkward and should read -- substantially parallel with an extension direction of said shaft --.

Note: The examiner requests that Applicant carefully review all the claims for similar grammatical errors.

Appropriate correction is required.

Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 5 recites the limitation, "wherein said shaft is at least partly threaded". It appears that the "threads" are referring to the same exterior grooves recited in claim 1. Therefore claim 5 does not further limit claim 1.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re clm 1: The limitation, "a carrying sleeve being arranged to be provided on an outer surface of said rotating member substantially perpendicular to extension of said grooves" is unclear rendering the claim indefinite. It is understood that the sleeve is mounted concentrically around the rotating member and perpendicular to the grooves. However, the sleeve extends in the axial direction parallel with the extension of the grooves. Also it is unclear which grooves Applicant is referring to since both inner and exterior grooves have been recited. Additionally, the limitation "as flat portions and/or grooves" is also unclear. Are the portions flat, grooves or both?

Re clm 9: Regarding the limitation, “an outer surface comprising portions for receiving a number of magnetic elements” both “an outer surface” and “a magnetic elements” have been previously recited in claim 9 and it is unclear if Applicant is referring to the same outer surface and magnetic elements.

Re clms 11-15: Claim 11 recites the limitation, “said shaft comprises a ball return”. However claims 12-15 describe the ball return as being formed in the ball nut. It is unclear if the ball return is in the shaft or the ball nut.

Re clm 16: Claim 16 recites the limitation, “the shaft is provided with a return cap” and the limitation “wherein the return cap system picks the balls up at one end of the nut”. It is unclear if the return cap is part of the shaft or the nut.

Re clm 12: The limitation, “said ball return comprises a notice” is unclear rendering the claim indefinite. What is a notice?

Re clm 13: The limitation, “a single liner screw” is unclear rendering the claim indefinite. What is a single liner screw?

Re clm 17: Claim 17 recites the limitation “the balls are lead through its path” in lines 2-3. There is insufficient antecedent basis for this limitation in the claim. Additionally, it is unclear which element the term “its” is referring to.

Re clm 20: Regarding the limitation, “an outer surface comprising portions for receiving a number of magnetic elements” both “an outer surface” and “magnetic elements” have been previously recited in claim 20 and it is unclear if Applicant is referring to the same outer surface and magnetic elements. Regarding the limitation, “substantially parallel with extension of said grooves” it is unclear which grooves

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Applicant is referring to since both inner and exterior grooves have been recited.

Additionally, the limitation "as flat portions and/or grooves" is also unclear. Are the portions flat, grooves or both?

Re clm 21: Claim 21 recites the limitation "said stators" in line 16. There is insufficient antecedent basis for this limitation in the claim. Additionally, the phrase "transforming station of said rotating member to a linear movement" is unclear.

Re clm 22: Regarding the limitation, "a number of magnetic elements", it is unclear if Applicant is referring to the same "at least one magnetic element" previously claimed in claim 22. Additionally, the limitation "as flat portions and/or grooves" is also unclear. Are the portions flat, grooves or both?

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-6, 9, 18 and 20-22, as best understood, are rejected under 35 U.S.C. 102 (b) as being anticipated by Tomita et al. (USP-6,244,374).

Re clm 1: Tomita discloses a device (Fig. 1) functioning as an electric motor or actuator comprising:

- a housing (10) encapsulating a rotating member (42)

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- one or several arrangements (50) for generating a magnetic field due to electrical current
- a displaceable shaft (30, 41; C3 L35-43) at least partly having exterior grooves (Fig. 1; C3 L51-56)
- said rotating member having at least a portion with inner grooves (Fig. 1) substantially corresponding to grooves on said shaft (C3 L51-56)
- a carrying sleeve (51) being arranged to be provided on an outer surface of said rotating member substantially perpendicular to an extension direction of said grooves (Fig. 1) for interaction with said arrangement and rotating said rotating member (C4 L1-33)
- wherein said sleeve has an interior shape corresponding to an outer surface of the rotating member (Fig. 1) and an outer surface comprising portions (A, see attached Fig. 2) for receiving a number of magnetic elements (51b), said portions being arranged as grooves for receiving said magnetic elements (Fig. 2)

Re clm 2: Tomita discloses said rotating element is a ball nut (C3 L43-45).

Re clm 3: Tomita discloses said shaft is arranged as a ball screw (C3 L43-45).

Re clm 4: Tomita discloses said rotating element is a nut (C3 L43-45).

Re clm 5: Tomita discloses said shaft is at least partly threaded (Fig. 1).

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Re clm 6: Tomita discloses an air gap between said magnetic element and said sleeve (Fig. 2).

Re clm 9: Tomita discloses a device adapted function as an electric motor or actuator, the device comprising:

- a housing (10) encapsulating a rotating member (42)
- one or several arrangements (50) for generating a magnetic field due to electrical current
- a displaceable shaft (30, 41; C3 L35-43) at least partly being arranged as a ball screw (portion 41, Fig. 1)
- said rotating member having a portion being provided as a ball nut (42, Fig. 1)
- magnetic elements (51b) arranged on an outer surface of a carrying sleeve (51) arranged on said rotating member substantially parallel with extension of said shaft (Fig. 1) for interaction with said arrangement and rotating said ball nut (C4 L1-33)
- wherein said sleeve has an interior shape corresponding to an outer surface of the rotating member (Fig. 1) and the outer surface comprising portions (A, see attached Fig. 2) for receiving a number of magnetic elements (10), said portions being arranged as a grooves for receiving said magnetic elements (Fig. 2)

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Re clm 18: Tomita discloses said shaft comprises means (40) for transforming rotation of the nut to an axial movement.

Re clm 20: Tomita discloses a vehicle having steering wheels (C3 L13-31) and an actuator (Fig. 1), the actuator comprising:

- a housing (10) encapsulating a rotating member (42)
- one or several arrangements (50) for generating a magnetic field due to electrical current
- a displaceable shaft (30, 41; C3 L35-43) at least partly having exterior grooves (portion 41, Fig. 1)
- said rotating member having a portion with inner grooves (42) corresponding to grooves on said shaft (C3 L51-56, Fig. 1)
- a carrying sleeve (51) having magnetic elements (51b) arranged on an outer surface of said sleeve (Fig. 2), being arranged on said rotating member substantially parallel with extension of said grooves (Fig. 1) for interaction with said arrangement and rotating said ball nut (C4 L1-33)
- wherein said sleeve has an interior shape corresponding to an outer surface of the rotating member (Fig. 1) and the outer surface comprising portions (A, see attached Fig. 2) for receiving a number of magnetic elements (51b), said portions being arranged as a grooves for receiving said magnetic elements (Fig. 2)

Re clm 21: Tomita discloses a method of actuating a device (Fig. 1) functioning as an electric motor or actuator, wherein the device comprises:

- a housing (10) encapsulating a rotating member (42)
- one or several arrangements (50) for generating a magnetic field due to electrical current
- a displaceable shaft (30, 41; C3 L35-43) at least partly being arranged as a ball screw (portion 41, Fig. 1)
- said rotating member having a portion being provided as a ball nut (42)
- the method comprises arranging magnetic elements (51b) on an outer surface of said rotating member substantially parallel with extension of said shaft for interaction with said arrangement and rotating said ball nut (Fig. 1, C4 L1-33), and energizing stators (52) to rotate said rotating member and transforming rotation of said rotating member to a linear movement (C4 L1-33).

Re clm 22: Tomita discloses a carrying sleeve (51) comprising: an outer surface (outer surface of 51, Fig. 2) provided with at least one space (Fig. 2) for receiving at least one magnetic element (51b), and inner space (Fig.1) for mounting on an outer surface of a rotatable member (42), wherein said space comprises portions (A, see attached Fig. 2) for receiving a number of magnetic elements (51b), said portions being arranged as grooves for receiving said magnetic elements (Fig. 2).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 7-8, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (USP-6,244,374) in view of Matsushita (USPGPub-20030010146).

Re clms 7-8: Tomita does not disclose said shaft is made in sections of different parts, wherein the different parts are made of different material.

Matusushita teaches a screw shaft (10) made of in sections of different parts (11, 14,13; Figs. 5 and 6), wherein the different parts are made of different materials (paragraph [0035]) for the purpose of providing a lightweight shaft that reduces manufacturing costs and improves productivity (see paragraph [0011]-[0013]).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have formed the shaft of Tomita in section of different parts, wherein the parts are made of different material, as taught by Matusushita, for the purpose of providing a lightweight shaft that reduces manufacturing costs and improves productivity (see paragraph [0011]-[0013]).

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (USP-6,244,374) in view of Koharagi et. al. (USP-6,376,958).

Re clm 10: Tomita does not disclose the sleeve is made of a laminated material.

Koharagi teaches a sleeve (7) made of a laminated material (see Abstract) for the purpose of reducing harmonic loss caused by the shaft (C2 L11-31).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have made the sleeve of Tomita form a laminated material, as taught by Koharagi, for the purpose of reducing harmonic loss caused by the shaft (C2 L11-31)

Claims 11-16, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (USP-6,244,374) in view of Koharagi et. al. (USP-6,376,958) further in view of Nishimura (USP-7,350,434).

Re clms 11-16: Tomita in view of Koharagi teach all of the claim limitations as described above.

Tomita does not disclose said shaft comprises a ball return, wherein said ball return comprises a notch arranged diagonally on the ball nut, a preload system, a return cap having a return channel (56, 60) and a wiper arranged between the return cap and the shaft, and grooves or ball tracks in which the balls return, said ball return comprises a single or multi liner system.

Nishimura discloses a ball return (Figs. 1 and 7) comprising a notch arranged diagonally on a ball nut (Fig. 7) a preload system (20), a return cap (5) having a return channel (56, 60) and a wiper (7) arranged between the return cap and the shaft (1, Fig. 1), and grooves or ball tracks (56, 60) in which the balls return, said ball return

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comprising a single or multi liner system, in order to achieve the predictable result of providing a recirculation system for the ball screw mechanism.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have included in the device of Tomita in view of Koharagi, said shaft comprises a ball return, wherein said ball return comprises a notch arranged diagonally on the ball nut, a preload system, a return cap having a return channel and a wiper arranged between the return cap and the shaft, and grooves or ball tracks in which the balls return, said ball return comprises a single or multi liner system, as taught by Nishimura, in order to achieve the predictable result of providing a recirculation system for the ball screw mechanism.

12. Claim 17, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (USP-6,244,374) in view of Koharagi et. al. (USP-6,376,958) further in view of Nishimura (USP-7,350,434) and Kapaan et al. (USPGPub-20030050569 A1).

Re clm 17: Tomita does not disclose said ball return comprises a liner return placed in the shaft and the balls are lead through its path over a portion between the ball tracks of the nut.

Kapaan teaches a ball screw device having a liner return (62) placed in the shaft (Fig. 6), and the balls are lead through its path over a portion between the ball tracks of the nut in order to achieve the predictable result of providing a recirculation system for the ball screw mechanism.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified the device of Tomita in view of Koharagi and Nishimura, to include a liner return placed in the shaft and the balls are lead through its path over a portion between the ball tracks of the nut, as taught by Kapaan, in order to achieve the predictable result of providing a recirculation system for the ball screw mechanism.

13. Claim 19, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (USP-6,244,374) in view of Godek (USP-6,026,924).

Re clm 19: Tomita does not explicitly disclose said housing is at least partly filled with a lubrication agent.

Godek teaches a steering device having a housing at least partly filled with a lubrication agent (68, see Fig. 1) for the purpose of providing a damping characteristic in the steering system offering better control (C3 L4-27).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified the device of Tomita such that said housing is at least partly filled with a lubrication agent, as taught by Godek, for the purpose of providing a damping characteristic in the steering system offering better control (C3 L4-27).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW A. JOHNSON whose telephone number is (571)272-7944. The examiner can normally be reached on Monday - Friday 9:00a.m. - 5:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW A JOHNSON/
Examiner, Art Unit 3656

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656

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